



#10

SEQUENCE LISTING

<110> MDS PROTEOMICS, INC.

<120> GRF2 BINDING PROTEINS AND APPLICATIONS THEREOF

<130> MDSP-P01-001

<140> 09/897,787

<141> 2001-06-29

<150> 60/215,504

<151> 2000-06-30

<150> 60/263,690

<151> 2001-01-24

<160> 29

<170> PatentIn version 3.1

<210> 1

<211> 1237

<212> PRT

<213> Homo sapiens

<400> 1

Met Gln Lys Ser Val Arg Tyr Asn Glu Gly His Ala Leu Tyr Leu Ala
1 5 10 15

Phe Leu Ala Arg Lys Glu Gly Thr Lys Arg Gly Phe Leu Ser Lys Lys
20 25 30

Thr Ala Glu Ala Ser Arg Trp His Glu Lys Trp Phe Ala Leu Tyr Gln
35 40 45

Asn Val Leu Phe Tyr Phe Glu Gly Glu Gln Ser Cys Arg Pro Ala Gly
50 55 60

Met Tyr Leu Leu Glu Gly Cys Ser Cys Glu Arg Thr Pro Ala Pro Pro
65 70 75 80

Arg Ala Gly Ala Gly Gln Gly Gly Val Arg Asp Ala Leu Asp Lys Gln
85 90 95

Tyr Tyr Phe Thr Val Leu Phe Gly His Glu Gly Gln Lys Pro Leu Glu
100 105 110

Leu Arg Cys Glu Glu Glu Gln Asp Gly Lys Glu Trp Met Glu Ala Ile
115 120 125

His Gln Ala Ser Tyr Ala Asp Ile Leu Ile Glu Arg Glu Val Leu Met
 130 135 140

Gln Lys Tyr Ile His Leu Val Gln Ile Val Glu Thr Glu Lys Ile Ala
 145 150 155 160

Ala Asn Gln Leu Arg His Gln Leu Glu Asp Gln Asp Thr Glu Ile Glu
 165 170 175

Arg Leu Lys Ser Glu Ile Ile Ala Leu Asn Lys Thr Lys Glu Arg Met
 180 185 190

Arg Pro Tyr Gln Ser Asn Gln Glu Asp Glu Asp Pro Asp Ile Lys Lys
 195 200 205

Ile Lys Lys Val Gln Ser Phe Met Arg Gly Trp Leu Cys Arg Arg Lys
 210 215 220

Trp Lys Thr Ile Val Gln Asp Tyr Ile Cys Ser Pro His Ala Glu Ser
 225 230 235 240

Met Arg Lys Arg Asn Gln Ile Val Phe Thr Met Val Glu Ala Glu Ser
 245 250 255

Glu Tyr Val His Gln Leu Tyr Ile Leu Val Asn Gly Phe Leu Arg Pro
 260 265 270

Leu Arg Met Ala Ala Ser Ser Lys Lys Pro Pro Ile Ser His Asp Asp
 275 280 285

Val Ser Ser Ile Phe Leu Asn Ser Glu Thr Ile Met Phe Leu His Glu
 290 295 300

Ile Phe His Gln Gly Leu Lys Ala Arg Ile Ala Asn Trp Pro Thr Leu
 305 310 315 320

Ile Leu Ala Asp Leu Phe Asp Ile Leu Leu Pro Met Leu Asn Ile Tyr
 325 330 335

Gln Glu Phe Val Arg Asn His Gln Tyr Ser Leu Gln Val Leu Ala Asn
 340 345 350

Cys Lys Gln Asn Arg Asp Phe Asp Lys Leu Leu Lys Gln Tyr Glu Ala
 355 360 365

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Pro | Ala | Cys | Glu | Gly | Arg | Met | Leu | Glu | Thr | Phe | Leu | Thr | Tyr | Pro | 370 | 375 | 380 | |
| Met | Phe | Gln | Ile | Pro | Arg | Tyr | Ile | Ile | Thr | Leu | His | Glu | Leu | Leu | Ala | 385 | 390 | 395 | 400 |
| His | Thr | Pro | His | Glu | His | Val | Glu | Arg | Lys | Ser | Leu | Glu | Phe | Ala | Lys | 405 | 410 | 415 | |
| Ser | Lys | Leu | Glu | Glu | Leu | Ser | Arg | Val | Met | His | Asp | Glu | Val | Ser | Asp | 420 | 425 | 430 | |
| Thr | Glu | Asn | Ile | Arg | Lys | Asn | Leu | Ala | Ile | Glu | Arg | Met | Ile | Val | Glu | 435 | 440 | 445 | |
| Gly | Cys | Asp | Ile | Leu | Leu | Asp | Thr | Ser | Gln | Thr | Phe | Ile | Arg | Gln | Gly | 450 | 455 | 460 | |
| Ser | Leu | Ile | Gln | Val | Pro | Ser | Val | Glu | Arg | Gly | Lys | Leu | Ser | Lys | Val | 465 | 470 | 475 | 480 |
| Arg | Leu | Gly | Ser | Leu | Ser | Leu | Lys | Lys | Glu | Gly | Glu | Arg | Gln | Cys | Phe | 485 | 490 | 495 | |
| Leu | Phe | Thr | Lys | His | Phe | Leu | Ile | Cys | Thr | Arg | Ser | Ser | Gly | Gly | Lys | 500 | 505 | 510 | |
| Leu | His | Leu | Leu | Lys | Thr | Gly | Gly | Val | Leu | Ser | Leu | Ile | Asp | Cys | Thr | 515 | 520 | 525 | |
| Leu | Ile | Glu | Glu | Pro | Asp | Ala | Ser | Asp | Asp | Asp | Ser | Lys | Gly | Ser | Gly | 530 | 535 | 540 | |
| Gln | Val | Phe | Gly | His | Leu | Asp | Phe | Lys | Ile | Val | Val | Glu | Pro | Pro | Asp | 545 | 550 | 555 | 560 |
| Ala | Ala | Ala | Phe | Thr | Val | Val | Leu | Leu | Ala | Pro | Ser | Arg | Gln | Glu | Lys | 565 | 570 | 575 | |
| Ala | Ala | Trp | Met | Ser | Asp | Ile | Ser | Gln | Cys | Val | Asp | Asn | Ile | Arg | Cys | 580 | 585 | 590 | |
| Asn | Gly | Leu | Met | Thr | Ile | Val | Phe | Glu | Glu | Asn | Ser | Lys | Val | Thr | Val | 595 | 600 | 605 | |

Pro His Met Ile Lys Ser Asp Ala Arg Leu His Lys Asp Asp Thr Asp
610 615 620

Ile Cys Phe Ser Lys Thr Leu Asn Ser Cys Lys Val Pro Gln Ile Arg
625 630 635 640

Tyr Ala Ser Val Glu Arg Leu Leu Glu Arg Leu Thr Asp Leu Arg Phe
645 650 655

Leu Ser Ile Asp Phe Leu Asn Thr Phe Leu His Thr Tyr Arg Ile Phe
660 665 670

Thr Thr Ala Ala Val Val Leu Gly Lys Leu Ser Asp Ile Tyr Lys Arg
675 680 685

Pro Phe Thr Ser Ile Pro Val Arg Ser Leu Glu Leu Phe Phe Ala Thr
690 695 700

Ser Gln Asn Asn Arg Gly Glu His Leu Val Asp Gly Lys Ser Pro Arg
705 710 715 720

Leu Cys Arg Lys Phe Ser Ser Pro Pro Pro Leu Ala Val Ser Arg Thr
725 730 735

Ser Ser Pro Val Arg Ala Arg Lys Leu Ser Leu Thr Ser Pro Leu Asn
740 745 750

Ser Lys Ile Gly Ala Leu Asp Leu Thr Thr Ser Ser Ser Pro Thr Thr
755 760 765

Thr Thr Gln Ser Pro Ala Ala Ser Pro Pro Pro His Thr Gly Gln Ile
770 775 780

Pro Leu Asp Leu Ser Arg Gly Leu Ser Ser Pro Glu Gln Ser Pro Gly
785 790 795 800

Thr Val Glu Glu Asn Val Asp Asn Pro Arg Val Asp Leu Cys Asn Lys
805 810 815

Leu Lys Arg Ser Ile Gln Lys Ala Val Leu Glu Ser Ala Pro Ala Asp
820 825 830

Arg Ala Gly Val Glu Ser Ser Pro Ala Ala Asp Thr Thr Glu Leu Ser
835 840 845

Pro Cys Arg Ser Pro Ser Thr Pro Arg His Leu Arg Tyr Arg Gln Pro
 850 855 860

Gly Gly Gln Thr Ala Asp Asn Ala His Cys Ser Val Ser Pro Ala Ser
 865 870 875 880

Ala Phe Ala Ile Ala Thr Ala Ala Ala Gly His Gly Ser Pro Pro Gly
 885 890 895

Phe Asn Asn Thr Glu Arg Thr Cys Asp Lys Glu Phe Ile Ile Arg Arg
 900 905 910

Thr Ala Thr Asn Arg Val Leu Asn Val Leu Arg His Trp Val Ser Lys
 915 920 925

His Ala Gln Asp Phe Glu Leu Asn Asn Glu Leu Lys Met Asn Val Leu
 930 935 940

Asn Leu Leu Glu Glu Val Leu Arg Asp Pro Asp Leu Leu Pro Gln Glu
 945 950 955 960

Arg Lys Ala Ala Ala Asn Ile Leu Arg Ala Leu Ser Gln Asp Asp Gln
 965 970 975

Asp Asp Ile His Leu Lys Leu Glu Asp Ile Ile Gln Met Thr Asp Cys
 980 985 990

Met Lys Ala Glu Cys Phe Glu Ser Leu Ser Ala Met Glu Leu Ala Glu
 995 1000 1005

Gln Ile Thr Leu Leu Asp His Val Ile Phe Arg Ser Ile Pro Tyr
 1010 1015 1020

Glu Glu Phe Leu Gly Gln Gly Trp Met Lys Leu Asp Lys Asn Glu
 1025 1030 1035

Arg Thr Pro Tyr Ile Met Lys Thr Ser Gln His Phe Asn Asp Met
 1040 1045 1050

Ser Asn Leu Val Ala Ser Gln Ile Met Asn Tyr Ala Asp Val Ser
 1055 1060 1065

Ser Arg Ala Asn Ala Ile Glu Lys Trp Val Ala Val Ala Asp Ile
 1070 1075 1080

Cys Arg Cys Leu His Asn Tyr Asn Gly Val Leu Glu Ile Thr Ser
1085 1090 1095

Ala Leu Asn Arg Ser Ala Ile Tyr Arg Leu Lys Lys Thr Trp Ala
1100 1105 1110

Lys Val Ser Lys Gln Thr Lys Ala Leu Met Asp Lys Leu Gln Lys
1115 1120 1125

Thr Val Ser Ser Glu Gly Arg Phe Lys Asn Leu Arg Glu Thr Leu
1130 1135 1140

Lys Asn Cys Asn Pro Pro Ala Val Pro Tyr Leu Gly Met Tyr Leu
1145 1150 1155

Thr Asp Leu Ala Phe Ile Glu Glu Gly Thr Pro Asn Phe Thr Glu
1160 1165 1170

Glu Gly Leu Val Asn Phe Ser Lys Met Arg Met Ile Ser His Ile
1175 1180 1185

Ile Arg Glu Ile Arg Gln Phe Gln Gln Thr Ser Tyr Arg Ile Asp
1190 1195 1200

His Gln Pro Lys Val Ala Gln Tyr Leu Leu Asp Lys Asp Leu Ile
1205 1210 1215

Ile Asp Glu Asp Thr Leu Tyr Glu Leu Ser Leu Lys Ile Glu Pro
1220 1225 1230

Arg Leu Pro Ala
1235

<210> 2
<211> 637
<212> PRT
<213> Homo sapiens

<400> 2

Met Ala Ala Met Ala Val Gly Gly Ala Gly Gly Ser Arg Val Ser Ser
1 5 10 15

Gly Arg Asp Leu Asn Cys Val Pro Glu Ile Ala Asp Thr Leu Gly Ala
20 25 30

Val Ala Lys Gln Gly Phe Asp Phe Leu Cys Met Pro Val Phe His Pro
 35 40 45

Arg Phe Lys Arg Glu Phe Ile Gln Glu Pro Ala Lys Asn Arg Pro Gly
 50 55 60

Pro Gln Thr Arg Ser Asp Leu Leu Leu Ser Gly Arg Asp Trp Asn Thr
 65 70 75 80

Leu Ile Val Gly Lys Leu Ser Pro Trp Ile Arg Pro Asp Ser Lys Val
 85 90 95

Glu Lys Ile Arg Arg Asn Ser Glu Ala Ala Met Leu Gln Glu Leu Asn
 100 105 110

Phe Gly Ala Tyr Leu Gly Leu Pro Ala Phe Leu Leu Pro Leu Asn Gln
 115 120 125

Glu Asp Asn Thr Asn Leu Ala Arg Val Leu Thr Asn His Ile His Thr
 130 135 140

Gly His His Ser Ser Met Phe Trp Met Arg Val Pro Leu Val Ala Pro
 145 150 155 160

Glu Asp Leu Arg Asp Asp Ile Ile Glu Asn Ala Pro Thr Thr His Thr
 165 170 175

Glu Glu Tyr Ser Gly Glu Glu Lys Thr Trp Met Trp Trp His Asn Phe
 180 185 190

Arg Thr Leu Cys Asp Tyr Ser Lys Arg Ile Ala Val Ala Leu Glu Ile
 195 200 205

Gly Ala Asp Leu Pro Ser Asn His Val Ile Asp Arg Trp Leu Gly Glu
 210 215 220

Pro Ile Lys Ala Ala Ile Leu Pro Thr Ser Ile Phe Leu Thr Asn Lys
 225 230 235 240

Lys Gly Phe Pro Val Leu Phe Lys Met His Gln Arg Leu Ile Phe Arg
 245 250 255

Leu Leu Lys Leu Glu Val Gln Phe Ile Ile Thr Gly Thr Asn His His
 260 265 270

Ser Glu Lys Glu Phe Cys Ser Tyr Leu Gln Tyr Leu Glu Tyr Leu Ser
 275 280 285

Gln Asn Arg Pro Pro Pro Asn Ala Tyr Glu Leu Phe Ala Lys Gly Tyr
 290 295 300

Glu Asp Tyr Leu Gln Ser Pro Leu Gln Pro Leu Met Asp Asn Leu Glu
 305 310 315 320

Ser Gln Thr Tyr Glu Val Phe Glu Lys Asp Pro Ile Lys Tyr Ser Gln
 325 330 335

Tyr Gln Gln Ala Ile Tyr Lys Cys Leu Leu Asp Arg Val Pro Glu Glu
 340 345 350

Glu Lys Asp Thr Asn Val Gln Val Leu Met Val Leu Gly Ala Gly Arg
 355 360 365

Gly Pro Leu Val Asn Ala Ser Leu Arg Ala Ala Lys Gln Ala Asp Arg
 370 375 380

Arg Ile Lys Leu Tyr Ala Val Glu Lys Asn Pro Asn Ala Val Val Thr
 385 390 395 400

Leu Glu Asn Trp Gln Phe Glu Glu Trp Gly Ser Gln Val Thr Val Val
 405 410 415

Ser Ser Asp Met Arg Glu Trp Val Ala Pro Glu Lys Ala Asp Ile Ile
 420 425 430

Val Ser Glu Leu Leu Gly Ser Phe Ala Asp Asn Glu Leu Ser Pro Glu
 435 440 445

Cys Leu Asp Gly Ala Gln His Phe Leu Lys Asp Asp Gly Val Ser Ile
 450 455 460

Pro Gly Glu Tyr Thr Ser Phe Leu Ala Pro Ile Ser Ser Ser Lys Leu
 465 470 475 480

Tyr Asn Glu Val Arg Ala Cys Arg Glu Lys Asp Arg Asp Pro Glu Ala
 485 490 495

Gln Phe Glu Met Pro Tyr Val Val Arg Leu His Asn Phe His Gln Leu
 500 505 510

Ser Ala Pro Gln Pro Cys Phe Thr Phe Ser His Pro Asn Arg Asp Pro
 515 520 525

Met Ile Asp Asn Asn Arg Tyr Cys Thr Leu Glu Phe Pro Val Glu Val
 530 535 540

Asn Thr Val Leu His Gly Phe Ala Val Tyr Phe Glu Thr Val Leu Tyr
 545 550 555 560

Gln Asp Ile Thr Leu Ser Ile Arg Pro Glu Thr His Ser Pro Gly Met
 565 570 575

Phe Ser Trp Phe Pro Ile Leu Phe Pro Ile Lys Gln Pro Ile Thr Val
 580 585 590

Arg Glu Gly Gln Thr Ile Cys Val Arg Phe Trp Arg Cys Ser Asn Ser
 595 600 605

Lys Lys Val Trp Tyr Glu Trp Ala Val Thr Ala Pro Val Cys Ser Ala
 610 615 620

Ile His Asn Pro Thr Gly Arg Ser Tyr Thr Ile Gly Leu
 625 630 635

<210> 3
 <211> 465
 <212> PRT
 <213> Homo sapiens

<400> 3

Met Ala Met Thr Gly Ser Thr Pro Cys Ser Ser Met Ser Asn His Thr
 1 5 10 15

Lys Glu Arg Val Thr Met Thr Lys Val Thr Leu Glu Asn Phe Tyr Ser
 20 25 30

Asn Leu Ile Ala Gln His Glu Glu Arg Glu Met Arg Gln Lys Lys Leu
 35 40 45

Glu Lys Val Met Glu Glu Glu Gly Leu Lys Asp Glu Glu Lys Arg Leu
 50 55 60

Arg Arg Ser Ala His Ala Arg Lys Glu Thr Glu Phe Leu Arg Leu Lys
 65 70 75 80

Arg Thr Arg Leu Gly Leu Glu Asp Phe Glu Ser Leu Lys Val Ile Gly

85

90

95

Arg Gly Ala Phe Gly Glu Val Arg Leu Val Gln Lys Lys Asp Thr Gly
 100 105 110

His Val Tyr Ala Met Lys Ile Leu Arg Lys Ala Asp Met Leu Glu Lys
 115 120 125

Glu Gln Val Gly His Ile Arg Ala Glu Arg Asp Ile Leu Val Glu Ala
 130 135 140

Asp Ser Leu Trp Val Val Lys Met Phe Tyr Ser Phe Gln Asp Lys Leu
 145 150 155 160

Asn Leu Tyr Leu Ile Met Glu Phe Leu Pro Gly Gly Asp Met Met Thr
 165 170 175

Leu Leu Met Lys Lys Asp Thr Leu Thr Glu Glu Glu Thr Gln Phe Tyr
 180 185 190

Ile Ala Glu Thr Val Leu Ala Ile Asp Ser Ile His Gln Leu Gly Phe
 195 200 205

Ile His Arg Asp Ile Lys Pro Asp Asn Leu Leu Leu Asp Ser Lys Gly
 210 215 220

His Val Lys Leu Ser Asp Phe Gly Leu Cys Thr Gly Leu Lys Lys Ala
 225 230 235 240

His Arg Thr Glu Phe Tyr Arg Asn Leu Asn His Ser Leu Pro Ser Asp
 245 250 255

Phe Thr Phe Gln Asn Met Asn Ser Lys Arg Lys Ala Glu Thr Trp Lys
 260 265 270

Arg Asn Arg Arg Gln Leu Ala Phe Ser Thr Val Gly Thr Pro Asp Tyr
 275 280 285

Ile Ala Pro Glu Val Phe Met Gln Thr Gly Tyr Asn Lys Leu Cys Asp
 290 295 300

Trp Trp Ser Leu Gly Val Ile Met Tyr Glu Met Leu Ile Gly Tyr Pro
 305 310 315 320

Pro Phe Cys Ser Glu Thr Pro Gln Glu Thr Tyr Lys Lys Val Met Asn

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          325              330              335
Trp Lys Glu Thr Leu Thr Phe Pro Pro Glu Val Pro Ile Ser Glu Lys
      340              345              350
Ala Lys Asp Leu Ile Leu Arg Phe Cys Cys Glu Trp Glu His Arg Ile
      355              360              365
Gly Ala Pro Gly Val Glu Glu Ile Lys Ser Asn Ser Phe Phe Glu Gly
      370              375              380
Val Asp Trp Glu His Ile Arg Glu Arg Pro Ala Ala Ile Ser Ile Glu
      385              390              395              400
Ile Lys Ser Ile Asp Asp Thr Ser Asn Phe Asp Glu Phe Pro Glu Ser
      405              410              415
Asp Ile Leu Lys Pro Thr Val Ala Thr Ser Asn His Pro Glu Thr Asp
      420              425              430
Tyr Lys Asn Lys Asp Trp Val Phe Ile Asn Tyr Thr Tyr Lys Arg Phe
      435              440              445
Glu Gly Leu Thr Ala Arg Gly Ala Ile Pro Ser Tyr Met Lys Ala Ala
      450              455              460

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Lys
465

<210> 4
 <211> 644
 <212> PRT
 <213> Homo sapiens

<400> 4

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Met Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Ser Pro Gly Gly Ser
1          5          10          15

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Gly Gly Gly Asp Ala Met His Cys Lys Val Ser Leu Leu Asp Asp Thr
20          25          30

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Val Tyr Glu Cys Val Val Glu Lys His Ala Lys Gly Gln Asp Leu Leu
35          40          45

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Lys Arg Val Cys Glu His Leu Asn Leu Leu Glu Glu Asp Tyr Phe Gly

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50

55

60

Leu Ala Ile Trp Asp Asn Ala Thr Ser Lys Thr Trp Leu Asp Ser Ala
 65 70 75 80

Lys Glu Ile Lys Lys Gln Val Arg Gly Val Pro Trp Asn Phe Thr Phe
 85 90 95

Asn Val Lys Phe Tyr Pro Pro Asp Pro Ala Gln Leu Thr Glu Asp Ile
 100 105 110

Thr Arg Tyr Tyr Leu Cys Leu Gln Leu Arg Gln Asp Ile Val Ala Gly
 115 120 125

Arg Leu Pro Cys Ser Phe Ala Thr Leu Ala Leu Leu Gly Ser Tyr Thr
 130 135 140

Ile Gln Ser Glu Leu Gly Asp Tyr Asp Pro Glu Leu His Gly Val Asp
 145 150 155 160

Tyr Val Ser Asp Phe Lys Leu Ala Pro Asn Gln Thr Lys Glu Leu Glu
 165 170 175

Glu Lys Val Met Glu Leu His Lys Ser Tyr Arg Ser Met Thr Pro Ala
 180 185 190

Gln Ala Asp Leu Glu Phe Leu Glu Asn Ala Lys Lys Leu Ser Met Tyr
 195 200 205

Gly Val Asp Leu His Lys Ala Lys Asp Leu Glu Gly Val Asp Ile Ile
 210 215 220

Leu Gly Val Cys Ser Ser Gly Leu Leu Val Tyr Lys Asp Lys Leu Arg
 225 230 235 240

Ile Asn Arg Phe Pro Trp Pro Lys Val Leu Lys Ile Ser Tyr Lys Arg
 245 250 255

Ser Ser Phe Phe Ile Lys Ile Arg Pro Gly Glu Gln Glu Gln Tyr Glu
 260 265 270

Ser Thr Ile Gly Phe Lys Leu Pro Ser Tyr Arg Ala Ala Lys Lys Leu
 275 280 285

Trp Lys Val Cys Val Glu His His Thr Phe Phe Arg Leu Thr Ser Thr

| | | |
|--|-----|-----|
| 290 | 295 | 300 |
| Asp Thr Ile Pro Lys Ser Lys Phe Leu Ala Leu Gly Ser Lys Phe Arg 305 310 315 320 | | |
| Tyr Ser Gly Arg Thr Gln Ala Gln Thr Arg Gln Ala Ser Ala Leu Ile 325 330 335 | | |
| Asp Arg Pro Ala Pro His Phe Glu Arg Thr Ala Ser Lys Arg Ala Ser 340 345 350 | | |
| Arg Ser Leu Asp Gly Ala Ala Ala Val Asp Ser Ala Asp Arg Ser Pro 355 360 365 | | |
| Arg Pro Thr Ser Ala Pro Ala Ile Thr Gln Gly Gln Val Ala Glu Gly 370 375 380 | | |
| Gly Val Leu Asp Ala Ser Ala Lys Lys Thr Val Val Pro Lys Ala Gln 385 390 395 400 | | |
| Lys Glu Thr Val Lys Ala Glu Val Lys Lys Glu Asp Glu Pro Pro Glu 405 410 415 | | |
| Gln Ala Glu Pro Glu Pro Thr Glu Ala Trp Lys Lys Lys Arg Glu Arg 420 425 430 | | |
| Leu Asp Gly Glu Asn Ile Tyr Ile Arg His Ser Asn Leu Met Leu Glu 435 440 445 | | |
| Asp Leu Asp Lys Ser Gln Glu Glu Ile Lys Lys His His Ala Ser Ile 450 455 460 | | |
| Ser Glu Leu Lys Lys Asn Phe Met Glu Ser Val Pro Glu Pro Arg Pro 465 470 475 480 | | |
| Ser Glu Trp Asp Lys Arg Leu Ser Thr His Ser Pro Phe Arg Thr Leu 485 490 495 | | |
| Asn Ile Asn Gly Gln Ile Pro Thr Gly Glu Gly Pro Pro Leu Val Lys 500 505 510 | | |
| Thr Gln Thr Val Thr Ile Ser Asp Asn Ala Asn Ala Val Lys Ser Glu 515 520 525 | | |
| Ile Pro Thr Lys Asp Val Pro Ile Val His Thr Glu Thr Lys Thr Ile | | |

530

535

540

Thr Tyr Glu Ala Ala Gln Thr Asp Asp Asn Ser Gly Asp Leu Asp Pro
 545 550 555 560

Gly Val Leu Leu Thr Ala Gln Thr Ile Thr Ser Glu Thr Pro Ser Ser
 565 570 575

Thr Thr Thr Thr Gln Ile Thr Lys Thr Val Lys Gly Gly Ile Ser Glu
 580 585 590

Thr Arg Ile Glu Lys Arg Ile Val Ile Thr Gly Asp Ala Asp Ile Asp
 595 600 605

His Asp Gln Val Leu Val Gln Ala Ile Lys Glu Ala Lys Glu Gln His
 610 615 620

Pro Asp Met Ser Val Thr Lys Val Val Val His Gln Glu Thr Glu Ile
 625 630 635 640

Ala Asp Glu Ile

<210> 5

<211> 809

<212> PRT

<213> Homo sapiens

<220>

<221> MISC_FEATURE

<222> (168)..(168)

<223> Xaa=unknown amino acid residue

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Met Thr Thr Glu Lys Ser Leu Val Thr Glu Ala Glu Asn Ser Gln His
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Gln Gln Lys Glu Glu Gly Glu Glu Ala Ile Asn Ser Gly Gln Gln Glu
 20 25 30

Pro Gln Gln Glu Glu Ser Cys Gln Thr Ala Ala Glu Gly Asp Asn Trp
 35 40 45

Cys Glu Gln Lys Leu Lys Ala Ser Asn Gly Asp Thr Pro Thr His Glu
 50 55 60

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Asp Leu Thr Lys Asn Lys Glu Arg Thr Ser Glu Ser Arg Gly Leu Ser
65              70              75              80

Arg Leu Phe Ser Ser Phe Leu Lys Arg Pro Lys Ser Gln Val Ser Glu
85              90              95

Glu Glu Gly Lys Glu Val Glu Ser Asp Lys Glu Lys Gly Glu Gly Gly
100              105              110

Gln Lys Glu Ile Glu Phe Gly Thr Ser Leu Asp Glu Glu Ile Ile Leu
115              120              125

Lys Ala Pro Ile Ala Ala Pro Glu Pro Glu Leu Lys Thr Asp Pro Ser
130              135              140

Leu Asp Leu His Ser Leu Ser Ser Ala Glu Thr Gln Pro Ala Gln Glu
145              150              155              160

Glu Leu Arg Glu Asp Pro Asp Xaa Glu Ile Lys Glu Gly Glu Gly Leu
165              170              175

Glu Glu Cys Ser Lys Ile Glu Val Lys Glu Glu Ser Pro Gln Ser Lys
180              185              190

Ala Glu Thr Glu Leu Lys Ala Ser Gln Lys Pro Ile Arg Lys His Arg
195              200              205

Asn Met His Cys Lys Val Ser Leu Leu Asp Asp Thr Val Tyr Glu Cys
210              215              220

Val Val Glu Lys His Ala Lys Gly Gln Asp Leu Leu Lys Arg Val Cys
225              230              235              240

Glu His Leu Asn Leu Leu Glu Glu Asp Tyr Phe Gly Leu Ala Ile Trp
245              250              255

Asp Asn Ala Thr Ser Lys Thr Trp Leu Asp Ser Ala Lys Glu Ile Lys
260              265              270

Lys Gln Val Arg Gly Val Pro Trp Asn Phe Thr Phe Asn Val Lys Phe
275              280              285

Tyr Pro Pro Asp Pro Ala Gln Leu Thr Glu Asp Ile Thr Arg Tyr Tyr
290              295              300

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Leu Cys Leu Gln Leu Arg Gln Asp Ile Val Ala Gly Arg Leu Pro Arg
305                      310                      315                      320

Ser Phe Ala Thr Leu Ala Leu Leu Gly Ser Tyr Thr Ile Gln Ser Glu
                      325                      330                      335

Leu Gly Asp Tyr Asp Pro Glu Leu His Gly Val Asp Tyr Val Ser Asp
                      340                      345                      350

Phe Lys Leu Ala Pro Asn Gln Thr Lys Glu Leu Glu Glu Lys Val Met
                      355                      360                      365

Glu Leu His Lys Ser Tyr Arg Ser Met Thr Pro Ala Gln Ala Asp Leu
370                      375                      380

Glu Phe Leu Glu Asn Ala Lys Lys Leu Ser Met Tyr Gly Val Asp Leu
385                      390                      395                      400

His Lys Ala Lys Asp Leu Glu Gly Val Asp Ile Ile Leu Gly Val Cys
                      405                      410                      415

Ser Ser Gly Leu Leu Val Tyr Lys Asp Lys Leu Arg Ile Asn Arg Phe
                      420                      425                      430

Pro Trp Pro Lys Val Leu Lys Ile Ser Tyr Lys Arg Ser Ser Phe Phe
435                      440                      445

Ile Lys Ile Arg Pro Gly Glu Gln Glu Gln Tyr Glu Ser Thr Ile Gly
450                      455                      460

Phe Lys Leu Pro Ser Tyr Arg Ala Ala Lys Lys Leu Trp Lys Val Cys
465                      470                      475                      480

Val Glu His His Thr Phe Phe Arg Leu Thr Ser Thr Asp Thr Ile Pro
                      485                      490                      495

Lys Ser Lys Phe Leu Ala Leu Gly Ser Lys Phe Arg Tyr Ser Gly Arg
500                      505                      510

Thr Gln Ala Gln Thr Arg Gln Ala Ser Ala Leu Ile Asp Arg Pro Ala
515                      520                      525

Pro His Phe Glu Arg Thr Ala Ser Lys Arg Ala Ser Arg Ser Leu Asp
530                      535                      540

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Gly Ala Ala Ala Val Asp Ser Ala Asp Arg Ser Pro Arg Pro Thr Ser
545                               550                               555                               560

Ala Pro Ala Ile Thr Gln Gly Gln Val Ala Glu Gly Gly Val Leu Asp
565                               570                               575

Ala Ser Ala Lys Lys Thr Val Val Pro Lys Ala Gln Lys Glu Thr Val
580                               585                               590

Lys Ala Glu Val Lys Lys Glu Asp Glu Pro Pro Glu Gln Ala Glu Pro
595                               600                               605

Glu Pro Thr Glu Ala Trp Lys Asp Leu Asp Lys Ser Gln Glu Glu Ile
610                               615                               620

Lys Lys His His Ala Ser Ile Ser Glu Leu Lys Lys Asn Phe Met Glu
625                               630                               635                               640

Ser Val Pro Glu Pro Arg Pro Ser Glu Trp Asp Lys Arg Leu Ser Thr
645                               650                               655

His Ser Pro Phe Arg Thr Leu Asn Ile Asn Gly Gln Ile Pro Thr Gly
660                               665                               670

Glu Gly Pro Pro Leu Val Lys Thr Gln Thr Val Thr Ile Ser Asp Asn
675                               680                               685

Ala Asn Ala Val Lys Ser Glu Ile Pro Thr Lys Asp Val Pro Ile Val
690                               695                               700

His Thr Glu Thr Lys Thr Ile Thr Tyr Glu Ala Ala Gln Thr Asp Asp
705                               710                               715                               720

Asn Ser Gly Asp Leu Asp Pro Gly Val Leu Leu Thr Ala Gln Thr Ile
725                               730                               735

Thr Ser Glu Thr Pro Ser Ser Thr Thr Thr Thr Gln Ile Thr Lys Thr
740                               745                               750

Val Lys Gly Gly Ile Ser Glu Thr Arg Ile Glu Lys Arg Ile Val Ile
755                               760                               765

Thr Gly Asp Ala Asp Ile Asp His Asp Gln Val Leu Val Gln Ala Ile
770                               775                               780

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<210> 7
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Zinc finger peptide

<220>
 <221> MISC_FEATURE
 <222> (2)..(3)
 <223> Xaa=any amino acid residue

<220>
 <221> MISC_FEATURE
 <222> (4)..(5)
 <223> Xaa=any amino acid residue and may or may not be present

<220>
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 <222> (7)..(9)
 <223> Xaa=any amino acid residue

<220>
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 <222> (11)..(15)
 <223> Xaa=any amino acid residue

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 <222> (17)..(18)
 <223> Xaa=any amino acid residue

<220>
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 <222> (20)..(22)
 <223> Xaa=any amino acid residue

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 <222> (23)..(23)
 <223> Xaa=any amino acid residue and may or may not be present

<400> 7

Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Leu
 1 5 10 15

Xaa Xaa His Xaa Xaa Xaa Xaa His
 20

Lys Glu Ala Lys Glu Gln His Pro Asp Met Ser Val Thr Lys Val Val
 785 790 795 800

Val His Gln Glu Thr Glu Ile Ala Asp
 805

<210> 6
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Zinc finger peptide

<220>
 <221> MISC_FEATURE
 <222> (2)..(3)
 <223> Xaa=any amino acid residue

<220>
 <221> MISC_FEATURE
 <222> (4)..(5)
 <223> Xaa=any amino acid residue and may or may not be present

<220>
 <221> MISC_FEATURE
 <222> (7)..(9)
 <223> Xaa=any amino acid residue

<220>
 <221> MISC_FEATURE
 <222> (18)..(25)
 <223> Xaa=any amino acid residue

<220>
 <221> MISC_FEATURE
 <222> (27)..(29)
 <223> Xaa=any amino acid residue

<220>
 <221> MISC_FEATURE
 <222> (30)..(31)
 <223> Xaa=any amino acid residue and may or may not be present

<400> 6

Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Leu Ile Val Met Phe Tyr Trp
 1 5 10 15

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa His Xaa Xaa Xaa Xaa His
 20 25 30

<210> 8
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Flagged epitope

<400> 8

Asp Tyr Lys Asp Asp Asp Asp Lys
 1 5

<210> 9
 <211> 342
 <212> PRT
 <213> Homo sapiens

<400> 9

Met Arg Lys Glu Thr Pro Pro Pro Leu Val Pro Pro Ala Ala Arg Glu
 1 5 10 15

Trp Asn Leu Pro Pro Asn Ala Pro Ala Cys Met Glu Arg Gln Leu Glu
 20 25 30

Ala Ala Arg Tyr Arg Ser Asp Gly Ala Leu Leu Leu Gly Ala Ser Ser
 35 40 45

Leu Ser Gly Arg Cys Trp Ala Gly Ser Leu Trp Leu Phe Lys Asp Pro
 50 55 60

Cys Ala Ala Pro Asn Glu Gly Phe Cys Ser Ala Gly Val Gln Thr Glu
 65 70 75 80

Ala Gly Val Ala Asp Leu Thr Trp Val Gly Glu Arg Gly Ile Leu Val
 85 90 95

Ala Ser Asp Ser Gly Ala Val Glu Leu Trp Glu Leu Asp Glu Asn Glu
 100 105 110

Thr Leu Ile Val Ser Lys Phe Cys Lys Tyr Glu His Asp Asp Ile Val
 115 120 125

Ser Thr Val Ser Val Leu Ser Ser Gly Thr Gln Ala Val Ser Gly Ser
 130 135 140

Lys Asp Ile Cys Ile Lys Val Trp Asp Leu Ala Gln Gln Val Val Leu

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145              150              155              160
Ser Ser Tyr Arg Ala His Ala Ala Gln Val Thr Cys Val Ala Ala Ser
      165              170              175
Pro His Lys Asp Ser Val Phe Leu Ser Cys Ser Glu Asp Asn Arg Ile
      180              185              190
Leu Leu Trp Asp Thr Arg Cys Pro Lys Pro Ala Ser Gln Ile Gly Cys
      195              200              205
Ser Ala Pro Gly Tyr Leu Pro Thr Ser Leu Ala Trp His Pro Gln Gln
      210              215              220
Ser Glu Val Phe Val Phe Gly Asp Glu Asn Gly Thr Val Ser Leu Val
      225              230              235              240
Asp Thr Lys Ser Thr Ser Cys Val Leu Ser Ser Ala Val His Ser Gln
      245              250              255
Cys Val Thr Gly Leu Val Phe Ser Pro His Ser Val Pro Phe Leu Ala
      260              265              270
Ser Leu Ser Glu Asp Cys Ser Leu Ala Val Leu Asp Ser Ser Leu Ser
      275              280              285
Glu Leu Phe Arg Ser Gln Ala His Arg Asp Phe Val Arg Asp Ala Thr
      290              295              300
Trp Ser Pro Leu Asn His Ser Leu Leu Thr Thr Val Gly Trp Asp His
      305              310              315              320
Gln Val Val His His Val Val Pro Thr Glu Pro Leu Pro Ala Pro Gly
      325              330              335
Pro Ala Ser Val Thr Glu
      340

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<210> 10
<211> 85
<212> PRT
<213> Homo sapiens

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<400> 10

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His His Leu Gly Val Leu His Arg Arg Asp Val Ser Asp Asp Gly Arg
1              5              10              15

```

Val His Asn Lys Tyr Tyr Trp Tyr Asp Glu Arg Gly Lys Lys Val Lys
20 25 30

Cys Thr Ala Pro Gln Tyr Val Asp Phe Val Met Ser Ser Val Gln Lys
35 40 45

Leu Val Thr Asp Glu Asp Val Phe Pro Thr Lys Tyr Gly Arg Glu Phe
50 55 60

Pro Ser Ser Phe Glu Ser Leu Val Arg Lys Ile Cys Arg His Leu Phe
65 70 75 80

His Val Leu Ala His
85

<210> 11
<211> 216
<212> PRT
<213> Homo sapiens

<400> 11

Met Ser Phe Leu Phe Ser Ser Arg Ser Ser Lys Thr Phe Lys Pro Lys
1 5 10 15

Lys Asn Ile Pro Glu Gly Ser His Gln Tyr Glu Leu Leu Lys His Ala
20 25 30

Glu Ala Thr Leu Gly Ser Gly Asn Leu Arg Gln Ala Val Met Leu Pro
35 40 45

Glu Gly Glu Asp Leu Asn Glu Trp Ile Ala Val Asn Thr Val Asp Phe
50 55 60

Phe Asn Gln Ile Asn Met Leu Tyr Gly Thr Ile Thr Glu Phe Cys Thr
65 70 75 80

Glu Ala Ser Cys Pro Val Met Ser Ala Gly Pro Arg Tyr Glu Tyr His
85 90 95

Trp Ala Asp Gly Thr Asn Ile Lys Lys Pro Ile Lys Cys Ser Ala Pro
100 105 110

Lys Tyr Ile Asp Tyr Leu Met Thr Trp Val Gln Asp Gln Leu Asp Asp
115 120 125

Glu Thr Leu Phe Pro Ser Lys Ile Gly Val Pro Phe Pro Lys Asn Phe
 130 135 140

Met Ser Val Ala Lys Thr Ile Leu Lys Arg Leu Phe Arg Val Tyr Ala
 145 150 155 160

His Ile Tyr His Gln His Phe Asp Ser Val Met Gln Leu Gln Glu Gly
 165 170 175

Ala His Leu Asn Thr Ser Phe Lys His Phe Ile Phe Phe Val Gln Glu
 180 185 190

Phe Asn Leu Ile Asp Arg Arg Glu Leu Ala Pro Leu Gln Glu Leu Ile
 195 200 205

Glu Lys Leu Gly Ser Lys Asp Arg
 210 215

<210> 12

<211> 247

<212> PRT

<213> Homo sapiens

<400> 12

Met Gln Ala Met Leu Glu Val Ser Ala Asn Met Met Lys Lys Arg Thr
 1 5 10 15

Ser His Lys Lys His Arg Ser Ser Val Gly Pro Ser Lys Pro Val Ser
 20 25 30

Gln Pro Arg Arg Asn Ile Val Gly Cys Arg Ile Gln His Gly Trp Lys
 35 40 45

Glu Gly Asn Gly Pro Val Thr Gln Trp Lys Gly Thr Val Leu Asp Gln
 50 55 60

Val Pro Val Asn Pro Ser Leu Tyr Leu Ile Lys Tyr Asp Gly Phe Asp
 65 70 75 80

Cys Val Tyr Gly Leu Glu Leu Asn Lys Asp Glu Arg Val Ser Ala Leu
 85 90 95

Glu Val Leu Pro Asp Arg Val Ala Thr Ser Arg Ile Ser Asp Ala His
 100 105 110

Leu Ala Asp Thr Met Ile Gly Lys Ala Val Glu His Met Phe Glu Thr
 115 120 125

Glu Asp Gly Ser Lys Asp Glu Trp Arg Gly Met Val Leu Ala Arg Ala
 130 135 140

Pro Val Met Asn Thr Trp Phe Tyr Ile Thr Tyr Glu Lys Asp Pro Val
 145 150 155 160

Leu Tyr Met Tyr Gln Leu Leu Asp Asp Tyr Lys Glu Gly Asp Leu Arg
 165 170 175

Ile Met Pro Asp Ser Asn Asp Ser Pro Pro Ala Glu Arg Glu Pro Gly
 180 185 190

Glu Val Val Asp Ser Leu Val Gly Lys Gln Val Glu Tyr Ala Lys Glu
 195 200 205

Asp Gly Ser Lys Arg Thr Gly Met Val Ile His Gln Val Glu Ala Lys
 210 215 220

Pro Ser Val Tyr Phe Ile Lys Phe Asp Asp Asp Phe His Ile Tyr Val
 225 230 235 240

Tyr Asp Leu Val Lys Thr Ser
 245

<210> 13
 <211> 291
 <212> PRT
 <213> Homo sapiens

<400> 13

Lys Ser Arg Arg Ala Gly Val Thr Lys Met Ser Asn Pro Phe Leu Lys
 1 5 10 15

Gln Val Phe Asn Lys Asp Lys Thr Phe Arg Pro Lys Arg Lys Phe Glu
 20 25 30

Pro Gly Thr Gln Arg Phe Glu Leu His Lys Lys Ala Gln Ala Ser Leu
 35 40 45

Asn Ala Gly Leu Asp Leu Arg Leu Ala Val Gln Leu Pro Pro Gly Glu
 50 55 60

Asp Leu Asn Asp Trp Val Ala Val His Val Val Asp Phe Phe Asn Arg


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65              70              75              80

Val Asn Leu Ile Tyr Gly Thr Ile Ser Asp Gly Cys Thr Glu Gln Ser
      85              90              95

Cys Pro Val Met Ser Gly Gly Pro Lys Tyr Glu Tyr Arg Trp Gln Asp
      100              105              110

Glu His Lys Phe Arg Lys Pro Thr Ala Leu Ser Ala Pro Arg Tyr Met
      115              120              125

Asp Leu Leu Met Asp Trp Ile Glu Ala Gln Ile Asn Asn Glu Asp Leu
      130              135              140

Phe Pro Thr Asn Val Gly Thr Pro Phe Pro Lys Asn Phe Leu Gln Thr
      145              150              155              160

Val Arg Lys Ile Leu Ser Arg Leu Phe Arg Val Phe Val His Val Tyr
      165              170              175

Ile His His Phe Asp Arg Ile Ala Gln Met Gly Ser Glu Ala His Val
      180              185              190

Asn Thr Cys Tyr Lys His Phe Tyr Tyr Phe Val Lys Glu Phe Gly Leu
      195              200              205

Ile Asp Thr Lys Glu Leu Glu Pro Leu Val Arg Gly Leu Gly Ala Glu
      210              215              220

Gly Val Arg Asn His Gln Val Arg His Leu Glu Pro Pro Gly Glu Gly
      225              230              235              240

Pro Pro Ser Arg Ala Leu Lys Glu Leu His Glu Ile Arg Asn Cys Leu
      245              250              255

Met Lys Cys Ile Ser Leu Tyr Leu Glu Asp Glu Ala Gln Thr Pro Thr
      260              265              270

Pro Leu Ser Pro Pro Gly Leu Gly Met Ser Pro Ala Ala Arg Pro Arg
      275              280              285

Ser Phe Pro
      290

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<210> 14

<211> 216
 <212> PRT
 <213> Homo sapiens

<400> 14

Met Ser Ile Ala Leu Lys Gln Val Phe Asn Lys Asp Lys Thr Phe Arg
 1 5 10 15

Pro Lys Arg Lys Phe Glu Pro Gly Thr Gln Arg Phe Glu Leu His Lys
 20 25 30

Arg Ala Gln Ala Ser Leu Asn Ser Gly Val Asp Leu Lys Ala Ala Val
 35 40 45

Gln Leu Pro Ser Gly Glu Asp Gln Asn Asp Trp Val Ala Val His Val
 50 55 60

Val Asp Phe Phe Asn Arg Ile Asn Leu Ile Tyr Gly Thr Ile Cys Glu
 65 70 75 80

Phe Cys Thr Glu Arg Thr Cys Pro Val Met Ser Gly Gly Pro Lys Tyr
 85 90 95

Glu Tyr Arg Trp Gln Asp Asp Leu Lys Tyr Lys Lys Pro Thr Ala Leu
 100 105 110

Pro Ala Pro Gln Tyr Met Asn Leu Leu Met Asp Trp Ile Glu Val Gln
 115 120 125

Ile Asn Asn Glu Glu Ile Phe Pro Thr Cys Val Gly Val Pro Phe Pro
 130 135 140

Lys Asn Phe Leu Gln Ile Cys Lys Lys Ile Leu Cys Arg Leu Phe Arg
 145 150 155 160

Val Phe Val His Val Tyr Ile His His Phe Asp Arg Val Ile Val Met
 165 170 175

Gly Ala Glu Ala His Val Asn Thr Cys Tyr Lys His Phe Tyr Tyr Phe
 180 185 190

Val Thr Glu Met Asn Leu Ile Asp Arg Lys Glu Leu Glu Pro Leu Lys
 195 200 205

Glu Met Thr Ser Arg Met Cys His
 210 215

<210> 15
 <211> 199
 <212> PRT
 <213> Homo sapiens

<400> 15

Met Asp Trp Leu Met Gly Lys Ser Lys Ala Lys Pro Asn Gly Lys Lys
 1 5 10 15

Pro Ala Ala Glu Glu Arg Lys Ala Tyr Leu Glu Pro Glu His Thr Lys
 20 25 30

Ala Arg Ile Thr Asp Phe Gln Phe Lys Glu Leu Val Val Leu Pro Arg
 35 40 45

Glu Ile Asp Leu Asn Glu Trp Leu Ala Ser Asn Thr Thr Thr Phe Phe
 50 55 60

His His Ile Asn Leu Gln Tyr Ser Thr Ile Ser Glu Phe Cys Thr Gly
 65 70 75 80

Glu Thr Cys Gln Thr Met Ala Val Cys Asn Thr Gln Tyr Tyr Trp Tyr
 85 90 95

Asp Glu Arg Gly Lys Lys Val Lys Cys Thr Ala Pro Gln Tyr Val Asp
 100 105 110

Phe Val Met Ser Ser Val Gln Lys Leu Val Thr Asp Glu Asp Val Phe
 115 120 125

Pro Thr Lys Tyr Gly Arg Glu Phe Pro Ser Ser Phe Glu Ser Leu Val
 130 135 140

Arg Lys Ile Cys Arg His Leu Phe His Val Leu Ala His Ile Tyr Trp
 145 150 155 160

Ala His Phe Lys Glu Thr Leu Ala Leu Glu Leu His Gly His Leu Asn
 165 170 175

Thr Leu Tyr Val His Phe Ile Leu Phe Ala Arg Glu Phe Asn Leu Leu
 180 185 190

Asp Pro Lys Glu Thr Ala Ile
 195

<210> 16
 <211> 148
 <212> PRT
 <213> Homo sapiens

<400> 16

Met Ser Phe Leu Phe Ser Ser Arg Ser Ser Lys Thr Phe Lys Pro Lys
 1 5 10 15

Lys Asn Ile Pro Glu Gly Ser His Gln Tyr Glu Leu Leu Lys His Ala
 20 25 30

Glu Ala Thr Leu Gly Ser Gly Asn Leu Arg Gln Ala Val Met Leu Pro
 35 40 45

Glu Gly Glu Asp Leu Asn Glu Trp Ile Ala Val Asn Thr Val Asp Phe
 50 55 60

Phe Asn Gln Ile Asn Met Leu Tyr Gly Thr Ile Thr Glu Phe Cys Thr
 65 70 75 80

Glu Ala Ser Cys Pro Val Met Ser Ala Gly Pro Arg Tyr Glu Tyr His
 85 90 95

Trp Ala Asp Gly Thr Asn Ile Lys Lys Pro Ile Lys Cys Ser Ala Pro
 100 105 110

Lys Tyr Ile Asp Tyr Leu Met Thr Trp Val Gln Asp Gln Leu Asp Asp
 115 120 125

Glu Thr Leu Phe Pro Ser Lys Ile Gly Glu Leu Thr Leu Ser Lys Tyr
 130 135 140

Ser Phe Phe Phe
 145

<210> 17
 <211> 216
 <212> PRT
 <213> Homo sapiens

<400> 17

Met Ser Phe Leu Leu Ser Ser Arg Ser Ser Lys Thr Phe Lys Pro Lys
 1 5 10 15

Lys Asn Ile Pro Glu Gly Ser His Gln Tyr Glu Leu Leu Lys His Ala

20

25

30

Glu Ala Thr Leu Gly Ser Gly Asn Leu Arg Gln Ala Val Met Leu Pro
 35 40 45

Glu Gly Glu Asp Leu Asn Glu Trp Ile Ala Val Asn Thr Val Asp Phe
 50 55 60

Phe Asn Gln Ile Asn Met Leu Tyr Gly Thr Ile Thr Glu Phe Cys Thr
 65 70 75 80

Glu Ala Ser Cys Pro Val Met Ser Ala Gly Pro Arg Tyr Glu Tyr His
 85 90 95

Trp Ala Asp Gly Thr Asn Ile Lys Lys Pro Ile Lys Cys Ser Ala Pro
 100 105 110

Lys Tyr Ile Asp Tyr Leu Met Thr Trp Val Gln Asp Gln Leu Asp Asp
 115 120 125

Glu Thr Leu Phe Pro Ser Lys Ile Gly Val Pro Phe Pro Lys Asn Phe
 130 135 140

Met Ser Val Ala Lys Thr Ile Leu Lys Arg Leu Phe Arg Val Tyr Ala
 145 150 155 160

His Ile Tyr His Gln His Phe Asp Ser Val Met Gln Leu Gln Glu Glu
 165 170 175

Ala His Leu Asn Thr Ser Phe Lys His Phe Ile Phe Phe Val Gln Glu
 180 185 190

Phe Asn Leu Ile Asp Arg Arg Glu Leu Ala Pro Leu Gln Glu Leu Ile
 195 200 205

Glu Lys Leu Gly Ser Lys Asp Arg
 210 215

<210> 18
 <211> 314
 <212> PRT
 <213> Saccharomyces cerevisiae

<400> 18

Met Ser Phe Leu Gln Asn Phe His Ile Ser Pro Gly Gln Thr Ile Arg
 1 5 10 15

Ser Thr Arg Gly Phe Lys Trp Asn Thr Ala Asn Ala Ala Asn Asn Ala
 20 25 30

Gly Ser Val Ser Pro Thr Lys Ala Thr Pro His Asn Asn Thr Ile Asn
 35 40 45

Gly Asn Asn Asn Ala Asn Thr Ile Asn Asn Arg Ala Asp Phe Thr
 50 55 60

Asn Asn Pro Val Asn Gly Tyr Asn Glu Ser Asp His Gly Arg Met Ser
 65 70 75 80

Pro Val Leu Thr Thr Pro Lys Arg His Ala Pro Pro Pro Glu Gln Leu
 85 90 95

Gln Asn Val Thr Asp Phe Asn Tyr Thr Pro Ser His Gln Lys Pro Phe
 100 105 110

Leu Gln Pro Gln Ala Gly Thr Thr Val Thr Thr His Gln Asp Ile Lys
 115 120 125

Gln Ile Val Glu Met Thr Leu Gly Ser Glu Gly Val Leu Asn Gln Ala
 130 135 140

Val Lys Leu Pro Arg Gly Glu Asp Glu Asn Glu Trp Leu Ala Val His
 145 150 155 160

Cys Val Asp Phe Tyr Asn Gln Ile Asn Met Leu Tyr Gly Ser Ile Thr
 165 170 175

Glu Phe Cys Ser Pro Gln Thr Cys Pro Arg Met Ile Ala Thr Asn Glu
 180 185 190

Tyr Glu Tyr Leu Trp Ala Phe Gln Lys Gly Gln Pro Pro Val Ser Val
 195 200 205

Ser Ala Pro Lys Tyr Val Glu Cys Leu Met Arg Trp Cys Gln Asp Gln
 210 215 220

Phe Asp Asp Glu Ser Leu Phe Pro Ser Lys Val Thr Gly Thr Phe Pro
 225 230 235 240

Glu Gly Phe Ile Gln Arg Val Ile Gln Pro Ile Leu Arg Arg Leu Phe
 245 250 255

Arg Val Tyr Ala His Ile Tyr Cys His His Phe Asn Glu Ile Leu Glu
 260 265 270

Leu Asn Leu Gln Thr Val Leu Asn Thr Ser Phe Arg His Phe Cys Leu
 275 280 285

Phe Ala Gln Glu Phe Glu Leu Leu Arg Pro Ala Asp Phe Gly Pro Leu
 290 295 300

Leu Glu Leu Val Met Glu Leu Arg Asp Arg
 305 310

<210> 19
 <211> 210
 <212> PRT
 <213> S. pombe

<400> 19

Met Phe Gly Phe Ser Asn Lys Thr Ala Lys Thr Phe Arg Val Arg Lys
 1 5 10 15

Thr Glu Ala Gly Thr Lys His Tyr Gln Leu Arg Gln Tyr Ala Glu Ala
 20 25 30

Thr Leu Gly Ser Gly Ser Leu Met Glu Ala Val Lys Leu Pro Lys Gly
 35 40 45

Glu Asp Leu Asn Glu Trp Ile Ala Met Asn Thr Met Asp Phe Tyr Thr
 50 55 60

Gln Ile Asn Met Leu Tyr Gly Thr Ile Thr Glu Phe Cys Thr Ala Ala
 65 70 75 80

Ser Cys Pro Gln Met Asn Ala Gly Pro Ser Tyr Glu Tyr Tyr Trp Gln
 85 90 95

Asp Asp Lys Ile Tyr Thr Lys Pro Thr Arg Met Ser Ala Pro Asp Tyr
 100 105 110

Ile Asn Asn Leu Leu Asp Trp Thr Gln Glu Lys Leu Asp Asp Lys Lys
 115 120 125

Leu Phe Pro Thr Glu Ile Gly Val Glu Phe Pro Lys Asn Phe Arg Lys
 130 135 140

Val Ile Gln Gln Ile Phe Arg Arg Leu Phe Arg Ile Tyr Ala His Ile
 145 150 155 160

Tyr Cys Ser His Phe His Val Met Val Ala Met Glu Leu Glu Ser Tyr
 165 170 175

Leu Asn Thr Ser Phe Lys His Phe Val Phe Phe Cys Arg Glu Phe Gly
 180 185 190

Leu Met Asp Asn Lys Glu Tyr Ala Pro Met Gln Asp Leu Val Asp Ser
 195 200 205

Met Val
 210

<210> 20
 <211> 129
 <212> PRT
 <213> Rattus norvegicus

<400> 20

Met Lys Ala Leu Ser Pro Val Arg Gly Cys Tyr Glu Ala Val Cys Cys
 1 5 10 15

Leu Ser Glu Arg Ser Leu Ala Ile Ala Arg Gly Arg Gly Lys Ser Pro
 20 25 30

Ser Ala Glu Glu Pro Leu Ser Leu Leu Asp Asp Met Asn His Cys Tyr
 35 40 45

Ser Arg Leu Arg Glu Leu Val Pro Gly Val Pro Arg Gly Thr Gln Leu
 50 55 60

Ser Gln Val Glu Ile Leu Gln Arg Val Ile Asp Tyr Ile Leu Asp Leu
 65 70 75 80

Gln Val Val Leu Ala Glu Pro Ala Pro Gly Pro Pro Asp Gly Pro His
 85 90 95

Leu Pro Ile Gln Val Arg Glu Gly Ala Arg Pro Gly Ser Ser Glu Arg
 100 105 110

Ala Gly Trp Asp Ala Ala Gly Leu Pro His Arg Val Leu Glu Tyr Leu
 115 120 125

Gly

<210> 21
 <211> 92
 <212> PRT
 <213> Homo sapiens

<400> 21

Met Ala Tyr Arg Gly Gln Gly Gln Lys Val Gln Lys Val Met Val Gln
 1 5 10 15

Pro Ile Asn Leu Ile Phe Arg Tyr Leu Gln Asn Arg Ser Arg Ile Gln
 20 25 30

Val Trp Leu Tyr Glu Gln Val Asn Met Arg Ile Glu Gly Cys Ile Ile
 35 40 45

Gly Phe Asp Glu Tyr Met Asn Leu Val Leu Asp Asp Ala Glu Glu Ile
 50 55 60

His Ser Lys Thr Lys Ser Arg Lys Gln Leu Gly Arg Ile Met Leu Lys
 65 70 75 80

Gly Asp Asn Ile Thr Leu Leu Gln Ser Val Ser Asn
 85 90

<210> 22
 <211> 123
 <212> PRT
 <213> Methanococcus jannaschii

<400> 22

Met Arg Trp Leu Thr Pro Phe Gly Met Leu Phe Ile Ser Gly Thr Tyr
 1 5 10 15

Tyr Gly Leu Ile Phe Phe Gly Leu Ile Met Glu Val Ile His Asn Ala
 20 25 30

Leu Ile Ser Leu Val Leu Ala Phe Phe Val Val Phe Ala Trp Asp Leu
 35 40 45

Val Leu Ser Leu Ile Tyr Gly Leu Arg Phe Val Lys Glu Gly Asp Tyr
 50 55 60

Ile Ala Leu Asp Trp Asp Gly Gln Phe Pro Asp Cys Tyr Gly Leu Phe
 65 70 75 80

Ala Ser Thr Cys Leu Ser Ala Val Ile Trp Thr Tyr Thr Asp Ser Leu
85 90 95

Leu Leu Gly Leu Ile Val Pro Val Ile Ile Val Phe Leu Gly Lys Gln
100 105 110

Leu Met Arg Gly Leu Tyr Glu Lys Ile Lys Ser
115 120

<210> 23

<211> 561

<212> PRT

<213> Homo sapiens

<400> 23

Met Ser Arg Val Val Pro Gly Gln Phe Asp Asp Ala Asp Ser Ser Asp
1 5 10 15

Ser Glu Asn Arg Asp Leu Lys Thr Val Lys Glu Lys Asp Asp Ile Leu
20 25 30

Phe Glu Asp Leu Gln Asp Asn Val Asn Glu Asn Gly Glu Gly Glu Ile
35 40 45

Glu Asp Glu Glu Glu Glu Gly Tyr Asp Asp Asp Asp Asp Asp Trp Asp
50 55 60

Trp Asp Glu Gly Val Gly Lys Leu Ala Lys Gly Tyr Val Trp Asn Gly
65 70 75 80

Gly Ser Asn Pro Gln Ala Asn Arg Gln Thr Ser Asp Ser Ser Ser Ala
85 90 95

Lys Met Ser Thr Pro Ala Asp Lys Val Leu Arg Lys Phe Glu Asn Lys
100 105 110

Ile Asn Leu Asp Lys Leu Asn Val Thr Asp Ser Val Ile Asn Lys Val
115 120 125

Thr Glu Lys Ser Arg Gln Lys Glu Ala Asp Met Tyr Arg Ile Lys Asp
130 135 140

Lys Ala Asp Arg Ala Thr Val Glu Gln Val Leu Asp Pro Arg Thr Arg
145 150 155 160

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Met Ile Leu Phe Lys Met Leu Thr Arg Gly Ile Ile Thr Glu Ile Asn
      165                      170                      175

Gly Cys Ile Ser Thr Gly Lys Glu Ala Asn Val Tyr His Ala Ser Thr
      180                      185                      190

Ala Asn Gly Glu Ser Arg Ala Ile Lys Ile Tyr Lys Thr Ser Ile Leu
      195                      200                      205

Val Phe Lys Asp Arg Asp Lys Tyr Val Ser Gly Glu Phe Arg Phe Arg
      210                      215                      220

His Gly Tyr Cys Lys Gly Asn Pro Arg Lys Met Val Lys Thr Trp Ala
      225                      230                      235                      240

Glu Lys Glu Met Arg Asn Leu Ile Arg Leu Asn Thr Ala Glu Ile Pro
      245                      250                      255

Cys Pro Glu Pro Ile Met Leu Arg Ser His Val Leu Val Met Ser Phe
      260                      265                      270

Ile Gly Lys Asp Asp Met Pro Ala Pro Leu Leu Lys Asn Val Gln Leu
      275                      280                      285

Ser Glu Ser Lys Ala Arg Glu Leu Tyr Leu Gln Val Ile Gln Tyr Met
      290                      295                      300

Arg Arg Met Tyr Gln Asp Ala Arg Leu Val His Ala Asp Leu Ser Glu
      305                      310                      315                      320

Phe Asn Met Leu Tyr His Gly Gly Gly Val Tyr Ile Ile Asp Val Ser
      325                      330                      335

Gln Ser Val Glu His Asp His Pro His Ala Leu Glu Phe Leu Arg Lys
      340                      345                      350

Asp Cys Ala Asn Val Asn Asp Phe Phe Met Arg His Ser Val Ala Val
      355                      360                      365

Met Thr Val Arg Glu Leu Phe Glu Phe Val Thr Asp Pro Ser Ile Thr
      370                      375                      380

His Glu Asn Met Asp Ala Tyr Leu Ser Lys Ala Met Glu Ile Ala Ser
      385                      390                      395                      400

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Gln Arg Thr Lys Glu Glu Arg Ser Ser Gln Asp His Val Asp Glu Glu
 405 410 415

Val Phe Lys Arg Ala Tyr Ile Pro Arg Thr Leu Asn Glu Val Lys Asn
 420 425 430

Tyr Glu Arg Asp Met Asp Ile Ile Met Lys Leu Lys Glu Glu Asp Met
 435 440 445

Ala Met Asn Ala Gln Gln Asp Asn Ile Leu Tyr Gln Thr Val Thr Gly
 450 455 460

Leu Lys Lys Asp Leu Ser Gly Val Gln Lys Val Pro Ala Leu Leu Glu
 465 470 475 480

Asn Gln Val Glu Glu Arg Thr Cys Ser Asp Ser Glu Asp Ile Gly Ser
 485 490 495

Ser Glu Cys Ser Asp Thr Asp Ser Glu Glu Gln Gly Asp His Ala Arg
 500 505 510

Pro Lys Lys His Thr Thr Asp Pro Asp Ile Asp Lys Lys Glu Arg Lys
 515 520 525

Lys Met Val Lys Glu Ala Gln Arg Glu Lys Arg Lys Asn Lys Ile Pro
 530 535 540

Lys His Val Lys Lys Arg Lys Glu Lys Thr Ala Lys Thr Lys Lys Gly
 545 550 555 560

Lys

<210> 24
 <211> 327
 <212> PRT
 <213> Homo sapiens

<400> 24

Met Val Lys Thr Trp Ala Glu Lys Glu Met Arg Asn Leu Ile Arg Leu
 1 5 10 15

Asn Thr Ala Glu Ile Pro Cys Pro Glu Pro Ile Met Leu Arg Ser His
 20 25 30

Val Leu Val Met Ser Phe Ile Gly Lys Asp Asp Met Pro Ala Pro Leu
 35 40 45

Leu Lys Asn Val Gln Leu Ser Glu Ser Lys Ala Arg Glu Leu Tyr Leu
 50 55 60

Gln Val Ile Gln Tyr Met Arg Arg Met Tyr Gln Asp Ala Arg Leu Val
 65 70 75 80

His Ala Asp Leu Ser Glu Phe Asn Met Leu Tyr His Gly Gly Gly Val
 85 90 95

Tyr Ile Ile Asp Val Ser Gln Ser Val Glu His Asp His Pro His Ala
 100 105 110

Leu Glu Phe Leu Arg Lys Asp Cys Ala Asn Val Asn Asp Phe Phe Met
 115 120 125

Arg His Ser Val Ala Val Met Thr Val Arg Glu Leu Phe Glu Phe Val
 130 135 140

Thr Asp Pro Ser Ile Thr His Glu Asn Met Asp Ala Tyr Leu Ser Lys
 145 150 155 160

Ala Met Glu Ile Ala Ser Gln Arg Thr Lys Glu Glu Arg Ser Ser Gln
 165 170 175

Asp His Val Asp Glu Glu Val Phe Lys Arg Ala Tyr Ile Pro Arg Thr
 180 185 190

Leu Asn Glu Val Lys Asn Tyr Glu Arg Asp Met Asp Ile Ile Met Lys
 195 200 205

Leu Lys Glu Glu Asp Met Ala Met Asn Ala Gln Gln Asp Asn Ile Leu
 210 215 220

Tyr Gln Thr Val Thr Gly Leu Lys Lys Asp Leu Ser Gly Val Gln Lys
 225 230 235 240

Val Pro Ala Leu Leu Glu Asn Gln Val Glu Glu Arg Thr Cys Ser Asp
 245 250 255

Ser Glu Asp Ile Gly Ser Ser Glu Cys Ser Asp Thr Asp Ser Glu Glu
 260 265 270

Gln Gly Asp His Ala Arg Pro Lys Lys His Thr Thr Asp Pro Asp Ile
 275 280 285

Asp Lys Lys Glu Arg Lys Lys Met Val Lys Glu Ala Gln Arg Glu Lys
 290 295 300

Arg Lys Asn Lys Ile Pro Lys His Val Lys Lys Arg Lys Glu Lys Thr
 305 310 315 320

Ala Lys Thr Lys Lys Gly Lys
 325

<210> 25
 <211> 558
 <212> PRT
 <213> Aspergillus nidulans

<400> 25

Met Ser Ser Asp Ser Thr Thr Gln Ala Ala Ser Pro Ala Glu Gly Leu
 1 5 10 15

Asn Pro Ser His Thr Tyr Val Pro Asn Lys Gly Tyr Ala Asn Glu Asp
 20 25 30

Gly Ala Val Pro Ala Met Ala Gly Gln Asp Leu Thr Pro Glu Asp Glu
 35 40 45

Asp Tyr Glu Gly Asp Glu Tyr Tyr Asp Asp Ile Phe Glu Glu Glu Leu
 50 55 60

Asp Glu Gly Asp Phe Asn Ser Ser Asn Pro Ala Asp Leu Thr Lys Ala
 65 70 75 80

Tyr Asn Arg Gln Arg Arg Val Asn Glu Leu Ala Ala Asp Pro Asn Ala
 85 90 95

Pro Lys Trp Thr Tyr Pro Lys Thr Asn Thr Gln Lys Pro Thr Val Asn
 100 105 110

Thr Tyr Ala Ser Val Asp Asp Glu Ile Lys Ser Leu Thr Arg His Ala
 115 120 125

Ala Lys Ile Lys Leu Asp Asn Val Gln Ser Gly Leu Ala Val Arg Gly
 130 135 140

Gly Ser Gly Thr Asp Arg Ala Asp Arg Ala Thr Ser Glu Gln Val Leu

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145              150              155              160

Asp Pro Arg Thr Arg Met Ile Leu Leu Gln Met Ile Asn Arg Asn Ile
              165              170              175

Val Ser Glu Ile His Gly Cys Leu Ser Thr Gly Lys Glu Ala Asn Val
              180              185              190

Tyr His Ala Met Leu Gln Pro Glu Asp Asp Phe Asp Ala Ala Pro Ile
              195              200              205

His Arg Ala Ile Lys Val Tyr Lys Thr Ser Ile Leu Val Phe Lys Asp
              210              215              220

Arg Asp Lys Tyr Val Thr Gly Glu Phe Arg Phe Arg Ser Gly Tyr Asn
225              230              235              240

Lys Ser Asn Asn Arg Ala Met Val Lys Leu Trp Ala Glu Lys Glu Met
              245              250              255

Arg Asn Leu Arg Arg Ile Tyr Ala Ala Gly Ile Pro Cys Pro Glu Pro
              260              265              270

Ile Asn Leu Arg Leu His Val Leu Val Met Gly Phe Val Gly Asn Ser
              275              280              285

Lys Gly Ile Ala Ala Pro Arg Leu Lys Asp Val Asp Phe Asn Ile Ser
              290              295              300

Asp Pro Glu Ser Lys Trp Arg Glu Leu Tyr Ile Asp Met Leu Gly Tyr
305              310              315              320

Met Arg Val Met Tyr Gln Thr Cys His Leu Val His Ala Asp Leu Ser
              325              330              335

Glu Tyr Asn Thr Leu Tyr His Asn Asp Lys Leu Tyr Val Ile Asp Val
              340              345              350

Ser Gln Ser Val Glu His Asp His Pro Arg Ser Leu Glu Phe Leu Arg
              355              360              365

Met Asp Ile Lys Asn Val Ser Asp Phe Phe Arg Arg Lys Gly Val Pro
              370              375              380

Thr Ile Ser Glu Arg Val Ile Phe Glu Phe Ile Ile Ser Ala Glu Gly

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385              390              395              400

Pro Ala Thr Val Thr Asp Glu Leu Arg Asp Ala Val Glu Lys Leu Phe
              405              410              415

Ser Leu Glu Pro Glu Ala Ala Asp Glu Val Asp Thr Ala Val Phe Arg
              420              425              430

Gln Gln Tyr Ile Pro Gln Thr Leu Asp Gln Val Tyr Asp Tyr Glu Arg
              435              440              445

Asp Ala Glu Lys Val Asn Ala Gly Glu Gly Asp Asp Leu Val Tyr Arg
              450              455              460

Asp Leu Leu Ala Arg Glu Lys Pro Ser Ala Pro Pro Asp Asp Glu Ala
465              470              475              480

Glu Thr Gly Ser Glu Val Ser Gly Gly Val Ser Ile Ala Glu Ser Gly
              485              490              495

Ser Glu Asp Glu Glu Glu Arg Asp Pro Phe Glu Lys Lys Pro Pro Arg
              500              505              510

Gly Lys Arg Phe Glu Asp Lys Glu Ser Lys Lys Glu His Lys Asn Lys
              515              520              525

Val Lys Glu Glu Lys Arg Glu Lys Arg Ala Asn Lys Met Pro Lys His
              530              535              540

Leu Lys Lys Arg Leu Val Ser Ser Ser Ser Arg Lys Arg Lys
545              550              555

<210> 26
<211> 484
<212> PRT
<213> Saccharomyces cerevisiae

<400> 26

Met Ser Leu Glu Asp Lys Phe Asp Ser Leu Ser Val Ser Gln Gly Ala
1              5              10              15

Ser Asp His Ile Asn Asn Gln Leu Leu Glu Lys Tyr Ser His Lys Ile
              20              25              30

Lys Thr Asp Glu Leu Ser Phe Ser Arg Ala Lys Thr Ser Lys Asp Lys
              35              40              45

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Ala Asn Arg Ala Thr Val Glu Asn Val Leu Asp Pro Arg Thr Met Arg
50 55 60

Phe Leu Lys Ser Met Val Thr Arg Gly Val Ile Ala Asp Leu Asn Gly
65 70 75 80

Cys Leu Ser Thr Gly Lys Glu Ala Asn Val Tyr His Ala Phe Ala Gly
85 90 95

Thr Gly Lys Ala Pro Val Ile Asp Glu Glu Thr Gly Gln Tyr Glu Val
100 105 110

Leu Glu Thr Asp Gly Ser Arg Ala Glu Tyr Ala Ile Lys Ile Tyr Lys
115 120 125

Thr Ser Ile Leu Val Phe Lys Asp Arg Glu Arg Tyr Val Asp Gly Glu
130 135 140

Phe Arg Phe Arg Asn Ser Arg Ser Gln His Asn Pro Arg Lys Met Ile
145 150 155 160

Lys Ile Trp Ala Glu Lys Glu Phe Arg Asn Leu Lys Arg Ile Tyr Gln
165 170 175

Ser Gly Val Ile Pro Ala Pro Lys Pro Ile Glu Val Lys Asn Asn Val
180 185 190

Leu Val Met Glu Phe Leu Ser Arg Gly Asn Gly Phe Ala Ser Pro Lys
195 200 205

Leu Lys Asp Tyr Pro Tyr Lys Asn Arg Asp Glu Ile Phe His Tyr Tyr
210 215 220

His Thr Met Val Ala Tyr Met Arg Leu Leu Tyr Gln Val Cys Arg Leu
225 230 235 240

Val His Ala Asp Leu Ser Glu Tyr Asn Thr Ile Val His Asp Asp Lys
245 250 255

Leu Tyr Met Ile Asp Val Ser Gln Ser Val Glu Pro Glu His Pro Met
260 265 270

Ser Leu Asp Phe Leu Arg Met Asp Ile Lys Asn Val Asn Leu Tyr Phe
275 280 285

Glu Lys Met Gly Ile Ser Ile Phe Pro Glu Arg Val Ile Phe Gln Phe
 290 295 300

Val Ile Ser Glu Thr Leu Glu Lys Phe Lys Gly Asp Tyr Asn Asn Ile
 305 310 315 320

Ser Ala Leu Val Ala Tyr Ile Ala Ser Asn Leu Pro Ile Lys Ser Thr
 325 330 335

Glu Gln Asp Glu Ala Glu Asp Glu Ile Phe Arg Ser Leu His Leu Val
 340 345 350

Arg Ser Leu Gly Gly Leu Glu Glu Arg Asp Phe Asp Arg Tyr Thr Asp
 355 360 365

Gly Lys Phe Asp Leu Leu Lys Ser Leu Ile Ala His Asp Asn Glu Arg
 370 375 380

Asn Phe Ala Ala Ser Glu Gln Phe Glu Phe Asp Asn Ala Asp His Glu
 385 390 395 400

Cys Ser Ser Gly Thr Glu Glu Phe Ser Asp Asp Glu Glu Asp Gly Ser
 405 410 415

Ser Gly Ser Glu Glu Asp Asp Glu Glu Glu Gly Glu Tyr Tyr Asp Asp
 420 425 430

Asp Glu Pro Lys Val Leu Lys Gly Lys Lys His Glu Asp Lys Asp Leu
 435 440 445

Lys Lys Leu Arg Lys Gln Glu Ala Lys Asp Ala Lys Arg Glu Lys Arg
 450 455 460

Lys Thr Lys Val Lys Lys His Ile Lys Lys Lys Leu Val Lys Lys Thr
 465 470 475 480

Lys Ser Lys Lys

<210> 27
 <211> 519
 <212> PRT
 <213> Homo sapiens

<400> 27

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Met Asp Leu Val Gly Val Ala Ser Pro Glu Pro Gly Thr Ala Ala Ala
1      5      10      15

Trp Gly Pro Ser Lys Cys Pro Trp Ala Ile Pro Gln Asn Thr Ile Ser
20      25      30

Cys Ser Leu Ala Asp Val Met Ser Glu Gln Leu Ala Lys Glu Leu Gln
35      40      45

Leu Glu Glu Glu Ala Ala Val Phe Pro Glu Val Ala Val Ala Glu Gly
50      55      60

Pro Phe Ile Thr Gly Glu Asn Ile Asp Thr Ser Ser Asp Leu Met Leu
65      70      75      80

Ala Gln Met Leu Gln Met Glu Tyr Asp Arg Glu Tyr Asp Ala Gln Leu
85      90      95

Arg Arg Glu Glu Lys Lys Phe Asn Gly Asp Ser Lys Val Ser Ile Ser
100     105     110

Phe Glu Asn Tyr Arg Lys Val His Pro Tyr Glu Asp Ser Asp Ser Ser
115     120     125

Glu Asp Glu Val Asp Trp Gln Asp Thr Arg Asp Asp Pro Tyr Arg Pro
130     135     140

Ala Lys Pro Val Pro Thr Pro Lys Lys Gly Phe Ile Gly Lys Gly Lys
145     150     155     160

Asp Ile Thr Thr Lys His Asp Glu Val Val Cys Gly Arg Lys Asn Thr
165     170     175

Ala Arg Met Glu Asn Phe Ala Pro Glu Phe Gln Val Gly Asp Gly Ile
180     185     190

Gly Met Asp Leu Lys Leu Ser Asn His Val Phe Asn Ala Leu Lys Gln
195     200     205

His Ala Tyr Ser Glu Glu Arg Arg Ser Ala Arg Leu His Glu Lys Lys
210     215     220

Glu His Ser Thr Ala Glu Lys Ala Val Asp Pro Lys Thr Arg Leu Leu
225     230     235     240

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Met Tyr Lys Met Val Asn Ser Gly Met Leu Glu Thr Ile Thr Gly Cys
 245 250 255

Ile Ser Thr Gly Lys Glu Ser Val Val Phe His Ala Tyr Gly Gly Ser
 260 265 270

Met Glu Asp Glu Lys Glu Asp Ser Lys Val Ile Pro Thr Glu Cys Ala
 275 280 285

Ile Lys Val Phe Lys Thr Thr Leu Asn Glu Phe Lys Asn Arg Asp Lys
 290 295 300

Tyr Ile Lys Asp Asp Phe Arg Phe Lys Asp Arg Phe Ser Lys Leu Asn
 305 310 315 320

Pro Arg Lys Ile His Arg Met Trp Ala Glu Lys Glu Met His Asn Leu
 325 330 335

Ala Arg Met Gln Arg Ala Gly Ile Pro Cys Pro Thr Val Val Leu Leu
 340 345 350

Lys Lys His Ile Leu Val Met Ser Phe Ile Gly His Asp Gln Val Pro
 355 360 365

Ala Pro Lys Leu Lys Glu Val Lys Leu Asn Ser Glu Glu Met Lys Glu
 370 375 380

Ala Tyr Tyr Gln Thr Leu His Leu Met Arg Gln Leu Tyr His Glu Cys
 385 390 395 400

Thr Leu Val His Ala Asp Leu Ser Glu Tyr Asn Met Leu Trp His Ala
 405 410 415

Gly Lys Val Trp Leu Ile Asp Val Ser Gln Ser Val Glu Pro Thr His
 420 425 430

Pro His Gly Leu Glu Phe Leu Phe Arg Asp Cys Arg Asn Val Ser Gln
 435 440 445

Phe Phe Gln Lys Gly Gly Val Lys Glu Ala Leu Ser Glu Arg Glu Leu
 450 455 460

Phe Asn Ala Val Ser Gly Leu Asn Ile Thr Ala Asp Asn Glu Ala Asp
 465 470 475 480

Phe Leu Ala Glu Ile Glu Ala Leu Glu Lys Met Asn Glu Asp His Val
 485 490 495

Gln Lys Asn Gly Arg Lys Ala Ala Ser Phe Leu Lys Asp Asp Gly Asp
 500 505 510

Pro Pro Leu Leu Tyr Asp Glu
 515

<210> 28
 <211> 552
 <212> PRT
 <213> Homo sapiens

<400> 28

Met Gly Lys Val Asn Val Ala Lys Leu Arg Tyr Met Ser Arg Asp Asp
 1 5 10 15

Phe Arg Val Leu Thr Ala Val Glu Met Gly Met Lys Asn His Glu Ile
 20 25 30

Val Pro Gly Ser Leu Ile Ala Ser Ile Ala Ser Leu Lys His Gly Gly
 35 40 45

Cys Asn Lys Val Leu Arg Glu Leu Val Lys His Lys Leu Ile Ala Trp
 50 55 60

Glu Arg Thr Lys Thr Val Gln Gly Tyr Arg Leu Thr Asn Ala Gly Tyr
 65 70 75 80

Asp Tyr Leu Ala Leu Lys Thr Leu Ser Ser Arg Gln Val Val Glu Ser
 85 90 95

Val Gly Asn Gln Met Gly Val Gly Lys Glu Ser Asp Ile Tyr Ile Val
 100 105 110

Ala Asn Glu Glu Gly Gln Gln Phe Ala Leu Lys Leu His Arg Leu Gly
 115 120 125

Arg Thr Ser Phe Arg Asn Leu Lys Asn Lys Arg Asp Tyr His Lys His
 130 135 140

Arg His Asn Val Ser Trp Leu Tyr Leu Ser Arg Leu Ser Ala Met Lys
 145 150 155 160

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|---|-----|-----|-----|
| Glu Phe Ala Tyr Met Lys Ala Leu Tyr Glu Arg Lys Phe Pro Val Pro | 165 | 170 | 175 |
| Lys Pro Ile Asp Tyr Asn Arg His Ala Val Val Met Glu Leu Ile Asn | 180 | 185 | 190 |
| Gly Tyr Pro Leu Cys Gln Ile His His Val Glu Asp Pro Ala Ser Val | 195 | 200 | 205 |
| Tyr Asp Glu Ala Met Glu Leu Ile Val Lys Leu Ala Asn His Gly Leu | 210 | 215 | 220 |
| Ile His Gly Asp Phe Asn Glu Phe Asn Leu Ile Leu Asp Glu Ser Asp | 225 | 230 | 235 |
| His Ile Thr Met Ile Asp Phe Pro Gln Met Val Ser Thr Ser His Pro | 245 | 250 | 255 |
| Asn Ala Glu Trp Tyr Phe Asp Arg Asp Val Lys Cys Ile Lys Asp Phe | 260 | 265 | 270 |
| Phe Met Lys Arg Phe Ser Tyr Glu Ser Glu Leu Phe Pro Thr Phe Lys | 275 | 280 | 285 |
| Asp Ile Arg Arg Glu Asp Thr Leu Asp Val Glu Val Ser Ala Ser Gly | 290 | 295 | 300 |
| Tyr Thr Lys Glu Met Gln Ala Asp Asp Glu Leu Leu His Pro Leu Gly | 305 | 310 | 315 |
| Pro Asp Asp Lys Asn Ile Glu Thr Lys Glu Gly Ser Glu Phe Ser Phe | 325 | 330 | 335 |
| Ser Asp Gly Glu Val Ala Glu Lys Ala Glu Val Tyr Arg Ser Glu Asn | 340 | 345 | 350 |
| Glu Ser Glu Arg Asn Cys Leu Glu Glu Ser Glu Gly Cys Tyr Cys Arg | 355 | 360 | 365 |
| Ser Ser Gly Asp Pro Glu Gln Ile Lys Glu Asp Ser Leu Ser Glu Glu | 370 | 375 | 380 |
| Ser Ala Asp Ala Arg Ser Phe Glu Met Thr Glu Phe Asn Gln Ala Leu | 385 | 390 | 395 |
| | | | 400 |

Glu Glu Ile Lys Gly Gln Val Val Glu Asn Asn Ser Val Thr Glu Phe
 405 410 415

Ser Glu Glu Lys Asn Arg Thr Glu Asn Tyr Asn Arg Gln Asp Gly Gln
 420 425 430

Arg Val Gln Gly Gly Val Pro Ala Gly Ser Asp Glu Tyr Glu Asp Glu
 435 440 445

Cys Pro His Leu Ile Ala Leu Ser Ser Leu Asn Arg Glu Phe Arg Pro
 450 455 460

Phe Arg Asp Glu Glu Asn Val Gly Ala Met Asn Gln Tyr Arg Thr Arg
 465 470 475 480

Thr Leu Ser Ile Thr Ser Ser Gly Ser Ala Val Ser Cys Ser Thr Ile
 485 490 495

Pro Pro Glu Leu Val Lys Gln Lys Val Lys Arg Gln Leu Thr Lys Gln
 500 505 510

Gln Lys Ser Ala Val Arg Arg Arg Leu Gln Lys Gly Glu Ala Asn Ile
 515 520 525

Phe Thr Lys Gln Arg Arg Glu Asn Met Gln Asn Ile Lys Ser Ser Leu
 530 535 540

Glu Ala Ala Ser Phe Trp Gly Glu
 545 550

<210> 29
 <211> 4
 <212> PRT
 <213> mammalian

<400> 29

Asp Glu Ala Asp
 1

